DEVELOPING PRIMARY CARE QUALITY INDICATORS FOR A SURGICAL APPROACH TO OBESITY

– A DELPHI DERIVED METHOD

Laura Peeters, KU Leuven

Promotor: Bert Vaes, KU Leuven
Co-promotor: Steve Van Den Bulck, KU Leuven

Master of Family Medicine
Masterproef Huisartsgeneeskunde
Academiejaar: 2023 – 2024

Deze masterproef is een examendocument dat niet werd gecorrigeerd voor eventueel vastgestelde fouten. Zonder voorafgaande schriftelijke toestemming van zowel de promotor(en) als de auteur(s) is overnemen, kopiëren, gebruiken of realiseren van deze uitgave of gedeelten ervan verboden. Voor aanvragen tot of informatie i.v.m. het overnemen en/of gebruik en/of realisatie van gedeelten uit deze publicatie, wendt u tot de universiteit waaraan de auteur is ingeschreven.
Voorafgaande schriftelijke toestemming van de promotor(en) is eveneens vereist voor het aanwenden van de in dit afstudeerwerk beschreven (originele) methoden, producten, schakelingen en programma's voor industrieel of commercieel nut en voor de inzending van deze publicatie ter deelname aan wetenschappelijke prijzen of wedstrijden.

ONTWIKKELEN VAN KWALITEITSINDICATOREN VOOR DE OPVOLGING VAN OBESITASCHIRURGIE IN DE HUISARTSENPRAKTIJK – EEN DELPHI-AFGELEIDE METHODE

Abstract

Doel: De prevalentie van overgewicht en obesitas neemt wereldwijd toe. Een accuraat management is essentieel om secundaire gezondheidsproblemen en overconsumptie van gezondheidszorg te verminderen. De chirurgische aanpak is een effectieve maar uitdagende behandeling. Daarom moet de kwaliteit van de zorg nauwlettend worden bewaakt. Het gebruik van indicatoren en de implementatie van een elektronisch medisch dossier (EMD) hebben hun effectiviteit in het verbeteren van de kwaliteit van zorg reeds bewezen. Het doel van deze studie is om EMD-extraheerbare kwaliteitsindicatoren te ontwikkelen voor een chirurgische aanpak van obesitas om de kwaliteit van de eerstelijnszorg op geautomatiseerde wijze te beoordelen en te verbeteren.

Methode: Er werd gebruik gemaakt van een Rand-gemodificeerde Delphi-methode, waarbij aanbevelingen door een multidisciplinair panel van experten werden beoordeeld. De aanbevelingen werden geselecteerd uit (inter)nationale richtlijnen op basis van het 'SMART'-principe en na beoordeling werden de mediaanscore, prioritisering en graad van consensus berekend. Er werd een consensusvergadering gehouden om de definitieve inclusie en exclusie te bespreken en na de eindbeoordeling van de panelleden, werd er een reeks aanbevelingen afgeleid en vertaald in kwaliteitsindicatoren.

Resultaten: Uit 15 (inter)nationale richtlijnen werd een lijst van 50 aanbevelingen afgeleid, waarvan er na deliberatie 26 geïncludeerd werden. Het panel formuleerde 3 extra aanbevelingen, wat na herformulering en samenvoeging resulteerde in een kernset van 25 aanbevelingen die in kwaliteitsindicatoren konden worden omgezet.

Conclusie: Deze studie resulteerde in een kernset van 25 kwaliteitsindicatoren voor de chirurgische aanpak van obesitas in de eerste lijn. De EMD extraheerbaarheid bevordert audit en feedback wat geautomatiseerde kwaliteitsbeoordeling mogelijk maakt.

DEVELOPING PRIMARY CARE QUALITY INDICATORS FOR A SURGICAL APPROACH TO OBESITY – A DELPHI DERIVED METHOD

Abstract

Aims: With the global prevalence of obesity on the rise, accurate management is necessary to reduce secondary health problems and overconsumption of healthcare. While surgical intervention proves to be effective, it poses considerable challenges. Therefore, the quality of care must be closely monitored. The use of indicators and the implementation of an electronic health record (EHR) have proven efficacy in enhancing the quality of care. The aim of this study is to develop EHR-extractable quality indicators for a surgical approach to obesity to assess and improve quality of primary care in an automated manner.
Methods: This study employed a Rand-modified Delphi method, which involves assessment of recommendations by a multidisciplinary expert panel. The recommendations were selected from (inter)national guidelines, based on the 'SMART' principle. After panel's assessment, the median score, prioritization, and degree of consensus were calculated. A consensus meeting was held to discuss final inclusion and exclusion and after the panel's final appraisal, a core set of recommendations was derived and translated into quality indicators.
Results: A list of 50 recommendations was generated from 15 (inter)national guidelines. After the rating procedure, 26 recommendations were retained. 3 additional recommendations were incorporated based on panel input. After reformulation and merging, a core set of 25 recommendations was established, all of which were translated into quality indicators.
Conclusion: This study resulted in a core set of 25 primary care quality indicators for the surgical approach to obesity. Given the EHR extractability, this set provides a framework for audit and feedback, facilitating automated quality assessment.

Background

The prevalence of overweight and obesity is increasing worldwide to such an extent that the World Health Organisation considers it an epidemic (1). According to Sciensano (1,2), 15,9% of Belgian adults are classified as obese (2018), which means they have a BMI of >30 kg/m2. Each year, 2.8 million people worldwide die from the consequences of obesity (1), since it contributes to multiple complications and comorbidities such as diabetes type II, cardiovascular diseases, obstructive sleep apnea syndrome, ... (3). Research has demonstrated that obese patients experience a reduced life expectancy of approximately 7 years compared to non-obese patients (4), and tend to have a higher amount of general practitioner visits and prescribed medications (3).
An accurate management of obesity is essential to reduce secondary health problems and its associated mortality as well as overconsumption of health care. While conservative approaches involving dietary modifications, exercise, and psychological interventions are usually preferred in primary care due to their low risk profile (3,4,5), surgical interventions offer greater efficacy in weight reduction and amelioration of comorbidities (6). However, the surgical approach carries a higher risk of complications (3,6), making it a more challenging option, especially for primary care providers. This challenge is compounded by the predominant provision of bariatric surgery within secondary care facilities, yet a significant portion of post-operative follow-up occurring in primary care. This makes integrated management between primary and secondary care indispensable.

To improve this management and guarantee optimal support for the bariatric patient, it is essential to monitor and assess the quality of care, thereby refining professional practices (7). The use of indicators to measure healthcare outcomes and processes (8) and the implementation of an EHR system (9,10) have proven efficacy in enhancing the quality of care. Furthermore, these combined efforts facilitate automated quality assessment, enabling the evaluation of a larger patient cohort (9), which will be necessary when the number of patients - and the lack of general practitioners - continues to rise. Nevertheless, there are no existing quality indicators on this subject and the guidelines remain limited, especially in primary care. Hence, the aim of this study is to develop evidence-based and EHR-extractable quality indicators (QIs) for a surgical approach to obesity to enhance automated quality assessment in primary care.

Methods

Study design

A RAND-modified Delphi method was used to develop QIs for surgical approach to obesity (11,12,13,14). This method includes 5 steps: (1) selection of recommendations from evidence-based guidelines and inclusion in a questionnaire, (2) individual assessment of the selected recommendations by an expert panel, followed by analysis and a written feedback report, (3) consensus meeting between the expert panel and definite selection of the recommendations, (4) final appraisal of each panel member, (5) translation of recommendations into a final set of QIs.

Panel selection

Various health-care professionals with an expertise in bariatric surgery were contacted by email. We wrote to 2 obesity centers of regional hospitals in Belgium. Additionally, two primary care facilities with a total of 11 general practitioners (GPs) were contacted. The EHR from one of these practices was used to draw a list of potential patients who underwent surgical treatment for obesity at least 2 years ago. Initially, three of them were contacted by phone. All interested parties received information about the aim of the study, the methods, the data processing, and the implications of participation. They confirmed their participation by signing the informed consent form.

Data collection

** Selection of recommendations from evidence-based guidelines*

First, the world wide web was searched for national en international guidelines based on search terms: “bariatric sugery” OR “gastric surgery” AND “guidelines” OR “international guidelines”. Only evidence-based guidelines published by renowned institutions were included. If one institution developed several revisions of one guideline, the most recent one was included. In addition, two important Dutch databases with guidelines for primary care (NHG, Domus Medica) and a Dutch database for medical experts (richtlijnendatabase) were checked. The guidelines had to be written in English or Dutch. Selection of recommendations was based on the SMART principle (specific, measurable, acceptable, realistic, timebound) and EHR extractability (15, 16). The recommendations were sorted into categories (definition, indications, pre-operative management and investigations, follow-up, management of complications and referral) and assembled in a questionnaire. Patients included in the panel received a modified questionnaire with exclusion of recommendations aimed for health care professionals.

** Rating procedure*

The recommendations in the questionnaire were rated by a multidisciplinary expert panel. Each panelist was asked to evaluate the recommendations based on their impact on the quality of care for obese patients undergoing a surgical treatment. To this end, they assigned a score from 1 (indicating minimal contribution to quality of care) to 9 (indicating maximal contribution to quality of care). In addition, the panel members were asked to make a top 5 ranking of the recommendations within each subcategory. Finally, they had to indicate whether each recommendation was assessable within their area of expertise and whether this recommendation could easily be retrieved from the EHR. If preferred, panelists were able to suggest new recommendations.

** Analysis*

Based on the results of the questionnaires, a median Likert scale score, a percentage of prioritization and a degree of agreement was calculated for each recommendation.
The *median Likert scale score* included the median of all scores (ranging from 1 to 9) assigned by the panelists.
In terms of *prioritization*, the recommendations ranked first in the top 5 list received a score of 5 points, the second place received 4 points, etc. Recommendations who were not in the top 5 list received no points. By adding up all these points and dividing them by the maximal amount of points, a percentage of prioritization was calculated for each recommendation.
The degree of *agreement* was defined as follows; we spoke of 'agreement' if ≥70% of the panel members assigned a score of ≥7; of 'disagreement' when ≥30% of the panelists awarded a score of ≥7 and ≥30% awarded a score of ≤3; other scores were defined as 'no agreement'.
By putting these 3 criteria together, each recommendation was divided into a category of high, uncertain, or low potential to measure the quality of care for obese patients within a surgical pathway, according to table 1 (11,12,13).

** Consensus round*

After data processing of the completed lists, all panel members received a feedback report containing the individual score, the median score, the percentage of prioritization, the degree of agreement and the category of potential for each recommendation, as well as new recommendations suggested by other panel members. A meeting was arranged among the panelists to discuss the results and determine which recommendations would be included or excluded from the final list. Generally, recommendations with high potential were included, while those with low potential were excluded, unless a panel member wished to discuss the eligibility. Recommendations with uncertain potential and the ones added by the panel members were discussed more comprehensively. Finally, all panelists received the final list of recommendations for their final approval.

** Translation into QIs*

After the panel's final appraisal, we derived a core set of recommendations which was translated into QIs by formulating them as a percentage.

Category of potential	Criteria of analysis
High	median ≥7 AND prioritization ≥20% AND agreement
Uncertain	median ≥7 AND prioritization ≥20% AND disagreement
	median ≥7 AND prioritization ≥20% AND no agreement
	median ≥7 AND prioritization <20% AND (dis)agreement
	median <7 AND prioritization ≥20% AND (dis)agreement
Low	median ≥7 AND prioritization <20% AND no agreement
	median <7 AND prioritization ≥20% AND no agreement
	median <7 AND prioritization <20% AND (no /dis)agreement

Table 1. classification of recommendations into categories of potential

Results

Panel selection

From the contacted obesity centers, following healthcare professionals agreed to participate in the expert panel: 1 psychologist, 2 dietitians and 2 abdominal surgeons. 4 GPs, one of which was an expert in the use of EHRs, and 2 patients completed the multidisciplinary panel for a total of 11 members.

Extraction of recommendations from evidence-based guidelines

The first search resulted in 18 possible guidelines. 3 of them were excluded after the first reading (17,18,19). 441 recommendations could be extracted from the remaining 15 international guidelines (3,5,20-32). By merging identical recommendations and applying the SMART-principle, we generated a list of 50 recommendations, which could be classified into 7 main categories (definition, indications, pre-operative management, pre-operative investigations, follow-up, management of complications, referral). The selection procedure is visualized in figure 1.

Questionnaire round

The list of 50 recommendations was included in a questionnaire for healthcare professionals. The questionnaire for patients consisted of 30 recommendations since their lack of expertise on pharmacological treatment, medication adjustments and specific laboratory tests. The response rate of the panel members was 100%. All recommendations were individually analyzed and categorized based on its potential, determined by calculation of the median score, prioritization and degree of agreement. Out of 50 recommendations, 28 recommendations were defined as ‘high potential’, 8 were marked as ‘uncertain potential’ and 14 were categorized as ‘low potential’.

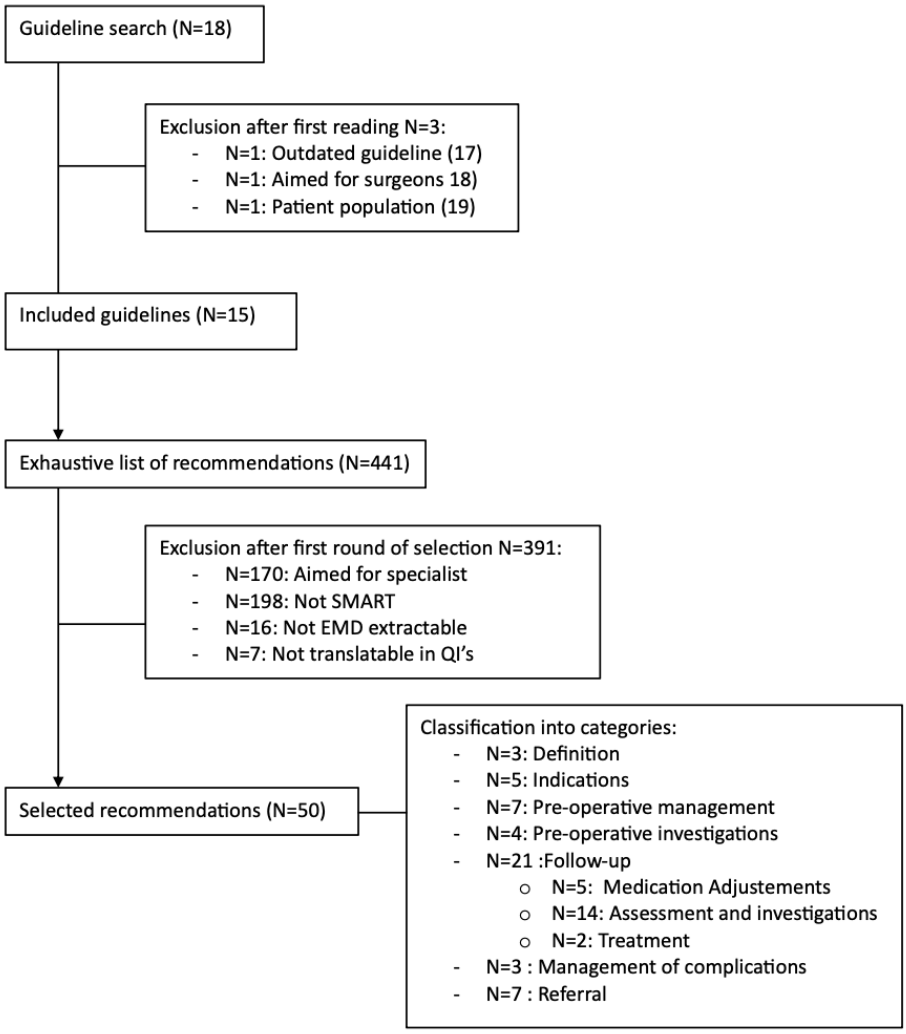


Figure 1. Selection of recommendations from (inter)national guidelines.

Consensus meeting round

Four panel members attended the consensus meeting: 1 GP, 1 dietitian, 1 psychologist and 1 patient. Initially, the recommendations with high potential were reviewed, and 25 of them were retained. The recommendations with uncertain potential underwent comprehensive discussion, after which 1 of them was included. All recommendations with low potential were excluded. Three new recommendations were introduced and approved by the panel. Before final inclusion, all selected recommendations were reassessed on the SMART principle and EHR extractability. After minimal modifications and merging of some recommendations, we ended up with a core set of 25 recommendations, according to table 2.

Final appraisal

The exhaustive list of recommendations obtained from the consensus meeting was mailed to all panelists for final appraisal. After some minor adjustments to 5 recommendations at the request of some panelists who could not attend the consensus meeting, all panelists agreed on the list in 2 rounds.

Table 2 – Quality indicators on bariatric surgery	
Definition and indication	
1	Percentage of patients whose length, weight and body mass index (BMI) is assessed annually
2a	Percentage of patients with normal weight (BMI 18.5-24.9 kg/m2)
2b	Percentage of patients diagnosed with overweight (BMI 25-29.9 kg/m2)
2c	Percentage of patients diagnosed with class I obesity (BMI 30-34.9 kg/m2)
2d	Percentage of patients diagnosed with class II obesity (BMI 35-39.9 kg/m2)
2e	Percentage of patients diagnosed with morbid obesity (BMI >40 kg/m2)
3	Percentage of patients with a (current or former) BMI >40kg/m2 or with a (current or former) BMI between 35-40kg/m2 and comorbidities that can be favorably influenced by weight loss who are referred to an obesity center
Pre-operative management	
4	Percentage of patients in a bariatric program whose smoking history is assessed
5	Percentage of patients in a bariatric program whose alcohol use is assessed
6a	Percentage of patients in a bariatric program with fasting blood glucose, lipid panel and liver enzymes monitored.
6b	Percentage of diabetic patients in a bariatric program with hemoglobin A1c monitored
Follow-up	
Medication adjustment	
7	Percentage of patients in a bariatric program who receive proton pump inhibitors (PPI) when use of non-steroidal anti-inflammatory drugs (NSAIDs) is unavoidable
8	Percentage of patients in a bariatric program who need to remain on low-dose aspirin for secondary prevention and receive PPI protection
9	Percentage of patients in a bariatric program who are not treated with NSAIDs or corticosteroids
Investigations	
10	Percentage of patients in a bariatric program whose weight is assessed every six months for life, after discharge from the obesity center
11	Percentage of patients in a bariatric program whose blood pressure and glucose - and lipid profile is assessed annually for life, after discharge from the obesity center
12a	Percentage of patients in a bariatric program who receive an annual blood test for life, after discharge from the obesity center
12b	Percentage of patients who underwent gastric banding or gastric sleeve surgery and receive an annual blood check with complete blood count, electrolytes, iron, ferritin, vitamin B12, folic acid, vitamin D, zinc, PTH, calcium, phosphorus, vitamin B1 and albumin
12c	Percentage of patients who underwent gastric bypass surgery and receive an annual blood check with complete blood count, electrolytes, iron, ferritin, vitamin B12, folic acid, vitamin D, zinc, PTH, calcium, phosphorus, vitamin B1, albumin, osteocalcin, copper, ceruloplasmin, vitamin E and vitamin A
13a	Percentage of patients in a bariatric program who receive a quarterly blood test with iron, folic acid, vitamin B12, vitamin D and calcium during pregnancy
13b	Percentage of patients who underwent gastric bypass surgery and receive a quarterly blood test with iron, folic acid, vitamin B12, vitamin D, calcium, vitamin A, vitamin E, vitamin K, zinc and copper during pregnancy
Treatment	
14	Percentage of patients in a bariatric program who are substituted with vitamins and minerals for life.
15	Percentage of patients in a bariatric program who receive 1mg of folic acid daily during pregnancy and six weeks postpartum or as long as breast feeding continues
Management of complications	
16	Percentage of patients in a bariatric program whose sugar levels are checked in case of hypoglycemia
17	Percentage of patients in a bariatric program who receive PPI for complaints of gastroesophageal reflux
18	Percentage of patients in a bariatric program who are treated with triple antibiotic therapy (amoxicillin, clarithromycin and metronidazole) and PPIs when diagnosed with H Pylori infection, and who are checked for eradication 4 weeks after treatment

Referral	
19	Percentage of patients in a bariatric program with excess tissue that impairs hygiene, causes discomfort, or is disfiguring who are referred for body-contouring surgery
20	Percentage of patients in a bariatric program who suffer from sleep apnea and are referred to a pulmonologist within 6 months for adjustment of BiPaP or CPAP therapy
21a	Percentage of patients in a bariatric program who are referred to an obesity center if they suffer from gastroesophageal reflux, chronic cough or recurrent aspiration pneumonia
21b	Percentage of patients in a bariatric program who are referred to an obesity center if they suffer from intermittent complaints of left hypochondriac pain with suspicion of internal herniation
21c	Percentage of patients in a bariatric program who are referred to an obesity center if they suffer from severe malnutrition or hypoglycemia
21d	Percentage of patients in a bariatric program who are referred to an obesity center if they suffer from abdominal pain during pregnancy
21e	Percentage of patients in a bariatric program who are referred to an obesity center in case of significant weight gain
22	Percentage of patients in a bariatric program who are referred for endoscopy when a stricture or presence of a strange object is suspected
23	Percentage of patients in a bariatric program who are referred for ultrasound in case of right hypochondriac pain to rule out cholecystitis or cholecystolithiasis
24	Percentage of patients in a bariatric program with an active smoking status who are referred to a tobaccoologist pre- or postoperatively
25	Percentage of patients in a bariatric program with alcohol abuse who are referred to a psychologist pre- or postoperatively

Formulation of the final set of QIs

All recommendations were translated into QIs. This resulted in a final set with 3 QIs on definition and indication, 3 QIs on pre-operative management, 9 QIs on follow-up, 3 QIs on management of complications and 7 QIs on referral.

Discussion

Principal findings

We developed a set of 25 EHR-extractable quality indicators for the surgical approach to obesity, using a Delphi-derived method. The set was approved by a multidisciplinary expert panel, including patients, and covers various aspects of healthcare: definition and indications, pre-operative management, follow-up, treatment, management of complications, and referral. The indicators on definition and indication are an important basis for the use of other quality indicators since a lack of diagnosis in the problem list of the EHR compromises the patient cohort upon which the quality assessment will be performed. This also implies accurate encoding and integrated data management and will be further discussed in the limitations section (10,33-34). Given recent advancements concerning the use of GLP-1 analogues in treatment of obesity (35,36,37), the panel made a few adjustments to the indicators on indication for bariatric surgery. The recommendations have been rephrased to "referral to an obesity clinic" rather than "referral for bariatric surgery." In this way the determination for surgical intervention or pharmacological treatment can be conducted by either the surgeon or endocrinologist (37). While no specific recommendations were provided regarding patient preferences in the indication process, it is deemed an important part of it. Despite it is not directly EHR extractable, the discussion of patient wishes is a first step in decreasing the referral gap (38). However, the panel concluded that this aspect does not require separate inclusion, as suggesting a referral still allows the patient the autonomy to accept or decline it as preferred.

Concerning the recommendations on preoperative management, no recommendations on psychological screening and dietary adjustments were included as these interventions are typically integrated in the obesity clinic's program, making them less specific for primary care. The panel formulated 3 additional recommendations concerning screening and management of nicotine and alcohol abuse, given their association with increased risk of severe complications (22, 23, 29). Since bariatric surgery typically occurs in secondary care, while the selected indicators are aimed for primary care, recommendations on referral are indispensable. Still, only 3 guidelines offer recommendations specific for primary care (3,5,31), indicating the challenge associated with management of the bariatric approach in this setting. However, with minor adjustments, the panel found the other recommendations to be valuable in primary care settings as well. To our knowledge, there are no existing quality indicators on this subject which means that, until now, there has been only limited opportunity to measure the quality of primary care. Guidelines exist to support daily practice; yet, the existing Belgian guideline is progressively becoming outdated (5). Nevertheless, up-to-date European guidelines are available (3,20,32) and, despite differences in the organization of primary care, the American and Canadian guidelines appear to be broadly applicable as well. However, without assessment of process or outcome indicators, the level of guideline adherence remains uncertain. By providing a feedback report on established indicators, guideline adherence can be improved (39), thereby enhancing clinical performance and quality of care. This study contributes to the development of these indicators, all of which are EHR-extractable, facilitating automated quality assessment (9-10).

Strengths and limitations

The recommendations were derived out of 15 (inter)national guidelines developed by 10 different renowned institutions making them widely supported and easy to extrapolate (14). We used a Delphi-derived method since it has proven to be a strong methodology in the development of QIs (11-14). The panel consisted of healthcare professionals of different disciplines and healthcare settings to consider every aspect of multidisciplinary care for the bariatric patient. Unlike many other studies using this methodology, we incorporated patients into our panel enabling a more comprehensive assessment of the current healthcare landscape (11-14). Another strength of this study is the use of the SMART principle to support the EHR-extractability of the QIs and provide a framework for audit and feedback, which enables automated quality assessment (7, 9-10, 15-16). However, the use of EHR-stored data has some limitations, as it might be incompletely coded, complicating the implementation of the QIs (10,33-34). Three theoretically measurable recommendations were ultimately excluded as they are currently not extractable from the EHR. Furthermore, there might be some discrepancies between EHR systems, so the application in practices outside Belgium remains to be seen (10,14). The advancement of new methodologies by software developers to optimize future integration and unification of data within EHR systems is essential to improve data extraction and management (10). Another restriction arises from the variability in levels of evidence of the different recommendations upon which the QIs are founded. Moreover, merging and translation into Dutch were necessary to obtain a workable questionnaire. There might be some participation bias, as only 4 out of 11 panel members, and none of the bariatric surgeons, were able to attend the consensus meeting. However, it's important to note that all participants had the opportunity to supply their feedback via email, and all of them provided their final appraisal in 2 rounds.

As the main aim of this study was the development of quality indicators, we did not perform operational testing, which is important to confirm the QIs validity and a necessary step in the creation of a quality loop (14). Additional research is needed to explore the application and incorporation of these indicators into audits, as well as to determine whether the quality assessment, which primarily focuses on process measures, also impacts outcome measures (8).

Conclusion

This study resulted in a core set of 25 quality indicators for the surgical approach to obesity in primary care. The set was based on international guidelines and approved by various healthcare professionals and patients using a Delphi-derived method. It contains different aspects of healthcare with indicators on definition and indications, pre-operative management, follow-up, treatment, management of complications and referral. By focusing on EHR-extractability, these indicators provide a framework for audit and feedback to assess and improve quality of care for bariatric patients in an automated manner.

References

1. *Cijfers*. (z.d.). sciensano.be. https://www.sciensano.be/nl/gezondheidsonderwerpen/obesitas/cijfers
2. *Gewichtstoestand*. (2022, 16 februari). Naar een gezond België. https://www.gezondbelgie.be/nl/gezondheidstoestand/determinanten-van-gezondheid/gewichtstoestand
3. Van Binsbergen, J., Langens, F., Dapper, A., Van Halteren, M., Glijsteen, R., Cleyndert, G., Mekenkamp-Oei, S. & Van Avendonk, M. (2011). NHG-Standaard Obesitas. *NHG- Standaarden voor de huisarts 2011*, 1359–1384. https://doi.org/10.1007/978-90-313-8279-8_72
4. Elisabeth M. H. Mathus-Vliegen. (2008). Diagnostiek en behandeling van obesitas bij volwassenen en kinderen. *Magma: Tijdschrift van de Nederlandse Vereniging van Maag-darm-leverartsen*, *14*(4). https://researchinformation.amsterdamumc.org/en/publications/diagnostiek-en-behandeling-van-obesitas-bij-volwassenen-en-kinder
5. P. Van Royen, B. Bastiaens, A. d' Hondt, C. Provoost & W. van der Borght. (2006). Aanbeveling voor een goede medische praktijkvoering: overgewicht en obesitas bij volwassenen in de huisartsenpraktijk. *Huisarts nu: maandblad van de Wetenschappelijke Vereniging van Vlaamse Huisartsen. - Brussel*, *35*(3), 118–140.
6. Telem, D., Greenstein, A. J., Wolfe, B. (2022). Outcomes of bariatric surgery. In W. Chen (Ed.), *UpToDate.* Retrieved December 27, 2022, from https://www.uptodate.com/contents/outcomes-of-bariatric-surgery
7. Ivers N, Jamtvedt G, Flottorp S, Young JM, Odgaard-Jensen J, French SD, O'Brien MA, Johansen M, Grimshaw J, Oxman AD. Audit and feedback: effects on professional practice and healthcare outcomes. Cochrane Database Syst Rev. 2012 Jun 13;(6):CD000259. doi: 10.1002/14651858.CD000259.pub3. PMID: 22696318.
8. Mainz J. Defining and classifying clinical indicators for quality improvement. Int J Qual Health Care. 2003 Dec;15(6):523-30. doi: 10.1093/intqhc/mzg081. PMID: 14660535.
9. Campanella P, Lovato E, Marone C, Fallacara L, Mancuso A, Ricciardi W, Specchia ML. The impact of electronic health records on healthcare quality: a systematic review and meta-analysis. Eur J Public Health. 2016 Feb;26(1):60-4. doi: 10.1093/eurpub/ckv122. Epub 2015 Jun 30. PMID: 26136462.
10. van der Bij S, Khan N, Ten Veen P, de Bakker DH, Verheij RA. Improving the quality of EHR recording in primary care: a data quality feedback tool. J Am Med Inform Assoc. 2017 Jan;24(1):81-87. doi:

10.1093/jamia/ocw054. Epub 2016 Jun 6. PMID: 27274019; PMCID: PMC7654082.

11. Dewaele, S., Van den Bulck, S., Gerne, L. & Vaes, B. (2022). Development of primary care quality indicators for chronic obstructive pulmonary disease using a Delphi-derived method. *npj Primary Care Respiratory Medicine*, *32*(1). https://doi.org/10.1038/s41533-022-00276-w
12. Van den Bulck, S. A., Vankrunkelsven, P., Goderis, G., Broekx, L., Dreesen, K., Ruijten, L., Mpoukouvalas, D. & Hermens, R. (2020). Development of quality indicators for type 2 diabetes, extractable from the electronic health record of the general physician. A rand-modified Delphi method. *Primary Care Diabetes*, *14*(1), 75–84. https://doi.org/10.1016/j.pcd.2019.05.002
13. Van den Bulck, S. A., Vankrunkelsven, P., Goderis, G., Van Pottelbergh, G., Swerts, J., Panis, K. & Hermens, R. (2020). Developing quality indicators for Chronic Kidney Disease in primary care, extractable from the Electronic Medical Record. A Rand-modified Delphi method. *BMC Nephrology*, *21*(1). https://doi.org/10.1186/s12882-020-01788-8
14. T. Kotter, E. Blozik, M. Scherer, Methods for the guideline-based development of quality indicators—a systematic review, Implement. Sci. 7 (2012) 21.
15. Doran, G. T. (1981). There'sa SMART way to write management's goals and objectives. *Management review*, *70*(11), 35-36.
16. Tichelaar, J., Den, S. H. U., Antonini, N., Van Agtmael, M. A., De Vries, T., & Richir, M. C. (2016). A 'SMART' way to determine treatment goals in pharmacotherapy education. *BJCP. British Journal Of Clinical Pharmacology. 82*(1), 280–284. https://doi.org/10.1111/bcp.12919
17. Froukje J. Verdam, C. de Jonge & Jan Greve. (2012). Richtlijn voor de behandeling van morbide obesitas. *Nederlands Tijdschrift voor Geneeskunde*, *156*.
18. Biertho L, Hong D, Gagner M. Canadian Adult Obesity Clinical Practice Guidelines: Bariatric Surgery: Surgical Options and Outcomes. Available from: https://obesitycanada.ca/guidelines/surgeryoptions. Accessed 13 june 2023.
19. Mathus-Vliegen, E. M. H. (2012). Prevalence, Pathophysiology, Health Consequences and Treatment Options of Obesity in the Elderly: A Guideline. *Obesity Facts*, *5*(3), 460–483. https://doi.org/10.1159/000341193
20. *Startpagina - Chirurgische behandeling van obesitas - Richtlijn - Richtlijnendatabase*. (z.d.). https://richtlijnendatabase.nl/richtlijn/chirurgische_behandeling_van_obesitas/startpagina_-_chirurgische_behandeling_van_obesitas.html
21. Fried, M., Yumuk, V., Oppert, J., Scopinaro, N., Torres, A., Weiner, R. A., Yashkov, Y. I., & Frühbeck, G. (2013). Interdisciplinary European Guidelines on Metabolic and Bariatric Surgery. *Obesity Facts*, *6*(5), 449–468. https://doi.org/10.1159/000355480
22. Mechanick, J. I., Apovian, C. M., Brethauer, S. A., Garvey, W. T., Joffe, A. M., Kim, J., Kushner, R. F., Lindquist, R. R., Pessah-Pollack, R., Seger, J., Urman, R. D., Adams, S. L., Cleek, J. B., Correa, R., Figaro, M. K., Flanders, K., Grams, J., Hurley, D. L., Kothari, S. N., . . . Still, C. D. (2019). Clinical Practice Guidelines For The Perioperative Nutrition, Metabolic, and Nonsurgical Support of Patients Undergoing Bariatric Procedures – 2019 Update: Cosponsored By American Association of Clinical Endocrinologists/American College of Endocrinology, The Obesity Society, American Society For Metabolic & Bariatric Surgery, Obesity Medicine Association, and American Society of Anesthesiologists. *Endocrine Practice*, *25*, 1–75. https://doi.org/10.4158/gl-2019-0406
23. Wharton, S., Lau, D. C., Vallis, M., Sharma, A. M., Biertho, L., Campbell-Scherer, D., Adamo, K. B., Alberga, A. S., Bell, R. C., Boulé, N. G., Boyling, E., Brown, J. E., Calam, B., Clarke, C., Crowshoe, L., DiValentino, D., Forhan, M., Freedhoff, Y., Gagner, M., . . . Wicklum, S. (2020). Obesity in adults: a clinical practice guideline. *Canadian Medical Association Journal*, *192*(31), E875–E891. https://doi.org/10.1503/cmaj.191707
24. Yumuk, V., Tsigos, C., Fried, M., Schindler, K., Busetto, L., Micić, D., & Toplak, H. (2015). European Guidelines for Obesity Management in Adults. *Obesity Facts*, *8*(6), 402–424. https://doi.org/10.1159/000442721

25. Busetto, L., Dicker, D., Azran, C., Batterham, R. L., Farpour-Lambert, N., Fried, M., Hjelmesæth, J., Kinzl, J. F., Leitner, D. R., Makaronidis, J., Schindler, K., Toplak, H., & Yumuk, V. (2017). Practical Recommendations of the Obesity Management Task Force of the European Association for the Study of Obesity for the Post-Bariatric Surgery Medical Management. *Obesity Facts*, *10*(6), 597–632. https://doi.org/10.1159/000481825
26. Eisenberg, D., Shikora, S. A., Aarts, E. O., Aminian, A., Angrisani, L., Cohen, R., De Luca, M., Faria, S. L., Goodpaster, K., Haddad, A., Himpens, J., Kow, L., Kurian, M., Loi, K., Mahawar, K., Nimeri, A., O'Kane, M., Papasavas, P., Ponce, J., . . . Kothari, S. N. (2022). 2022 American Society of Metabolic and Bariatric Surgery (ASMBS) and International Federation for the Surgery of Obesity and Metabolic Disorders (IFSO) Indications for Metabolic and Bariatric Surgery. *Obesity Surgery*, *33*(1), 3–14. https://doi.org/10.1007/s11695-022-06332-1
27. SAGES guideline for clinical application of laparoscopic bariatric surgery. (2009). *Surgery for Obesity and Related Diseases*, *5*(3), 387–405. https://doi.org/10.1016/j.soard.2009.01.010
28. Dilektaşlı, E., & Demir, B. (2021). Definitions and current indications for obesity and metabolic surgery. *Annals of Laparoscopic and Endoscopic Surgery*, *6*, 8. https://doi.org/10.21037/ales-20-52
29. Glazer S, Biertho L. Canadian Adult Obesity Clinical Practice Guidelines: Bariatric Surgery: Selection & Pre-Operative Workup. Available from: https://obesitycanada.ca/guidelines/preop. Accessed 29 may 2023.
30. Shiau J, Biertho L. Canadian Adult Obesity Clinical Practice Guidelines: Bariatric Surgery: Postoperative Management. Downloaded from: https://obesitycanada.ca/guidelines/postop. Accessed 13 june 2023.
31. Campbell-Scherer D, Walji S, Kemp A, Piccinini-Vallis H, Vallis TM. Canadian Adult Obesity Clinical Practice Guidelines: Primary Care and Primary Healthcare in Obesity Management. Downloaded from: https://obesitycanada.ca/guidelines/primarycare. Accessed 19 june 2023.
32. Di Lorenzo, N., Antoniou, S. A., Batterham, R. L., Busetto, L., Godoroja, D., Iossa, A., Carrano, F. M., Agresta, F., Alarcón, I., Azran, C., Bouvy, N. D., Ponz, C. B., Buza, M., Copaescu, C., De Luca, M., Dicker, D., Di Vincenzo, A., Felsenreich, D. M., Francis, N., . . . Silecchia, G. (2020). Clinical practice guidelines of the European Association for Endoscopic Surgery (EAES) on bariatric surgery: update 2020 endorsed by IFSO-EC, EASO and ESPCOP. *Surgical Endoscopy and Other Interventional Techniques*, *34*(6), 2332–2358. https://doi.org/10.1007/s00464-020-07555-y
33. Verheij RA, Curcin V, Delaney BC, McGilchrist MM. Possible Sources of Bias in Primary Care Electronic Health Record Data Use and Reuse. J Med Internet Res. 2018 May 29;20(5):e185. doi: 10.2196/jmir.9134. PMID: 29844010; PMCID: PMC5997930.
34. Farmer R, Mathur R, Bhaskaran K, Eastwood SV, Chaturvedi N, Smeeth L. Promises and pitfalls of electronic health record analysis. Diabetologia. 2018 Jun;61(6):1241-1248. doi: 10.1007/s00125-017-4518-6. Epub 2017 Dec 15. PMID: 29247363; PMCID: PMC6447497.
35. Tan HC, Dampil OA, Marquez MM. Efficacy and Safety of Semaglutide for Weight Loss in Obesity Without Diabetes: A Systematic Review and Meta-Analysis. J ASEAN Fed Endocr Soc. 2022;37(2):65-72. doi: 10.15605/jafes.037.02.14. Epub 2022 Aug 23. PMID: 36578889; PMCID: PMC9758543.
36. Iqbal J, Wu HX, Hu N, Zhou YH, Li L, Xiao F, Wang T, Jiang HL, Xu SN, Huang BL, Zhou HD. Effect of glucagon-like peptide-1 receptor agonists on body weight in adults with obesity without diabetes mellitus-a systematic review and meta-analysis of randomized control trials. Obes Rev. 2022 Jun;23(6):e13435. doi: 10.1111/obr.13435. Epub 2022 Feb 22. PMID: 35194917.
37. *KB beperkt het voorschrijven van GLP-1-analogen | Domus Medica*. (z.d.). https://www.domusmedica.be/actueel/kb-beperkt-het-voorschrijven-van-glp-1-analogen
38. Lopez EKH, Helm MC, Gould JC, Lak KL. Primary care providers' attitudes and knowledge of bariatric surgery. Surg Endosc. 2020 May;34(5):2273-2278. doi: 10.1007/s00464-019-07018-z. Epub 2019 Jul 31. PMID: 31367984.
39. Sebek KM, Virkud A, Singer J, Pulgarin CP, Schreibstein L, Wang JJ. Preliminary evaluation of a comprehensive provider feedback report. J Med Pract Manage. 2014 May-Jun;29(6):397-405. PMID: 25108993.

Attachments

Definitie

	Aanbeveling	Bron	Jaar	Evidentie*	Score *(1 laagste score, 9 hoogste score)*	Ranking
1	Controle van lengte, gewicht, buikomtrek en BMI moeten deel uitmaken van het routine klinisch onderzoek bij alle volwassenen.	OC NHG	2020 2020	No Grade No Grade	**1 2 3 4 5 6 7 8 9** ○ **Niet beoordeelbaar** ○ **EMD extraheerbaar**	
2	Het BMI van patiënten wordt als volgt geclassificeerd: BMI 18.5-24.9 - Normaal Gewicht BMI 25-29.9 - Overgewicht BMI 30-34.9 - Klasse 1 Obesitas BMI 35-39.9 - Klasse 2 Obesitas BMI >40 - Morbide Obesitas	NHG OC SAGES ASMBS/IFSO	2020 2020 2009 2022	No Grade No Grade No Grade No Grade	**1 2 3 4 5 6 7 8 9** ○ **Niet beoordeelbaar** ○ **EMD extraheerbaar**	
3	Voor de Aziatische populatie geldt volgende classificatie: BMI 18.5-22.9 - Normaal Gewicht BMI 23-24.9 - Overgewicht BMI 25-29.9 - Klasse 1 Obesitas BMI > 30 - Klasse 2 Obesitas	ASMBS	2019	G D	**1 2 3 4 5 6 7 8 9** ○ **Niet beoordeelbaar** ○ **EMD extraheerbaar**	

Opmerkingen of suggesties voor nieuwe aanbevelingen:

Indicaties						
	Aanbeveling	**Bron**	**Jaar**	**Evidentie**	**Score**	**Ranking**
4	Patiënten met een (actueel of voormalig) BMI >40kg/m2 zijn potentiële kandidaten voor metabole en bariatrische heelkunde (MBH).	NHG NVvH DM EASO/IFSO OC ASMBS SAGES ALES EAES EASO	2020 2020 2011 2013 2020 2019 2009 2020 2020 2015	No Grade No Grade No Grade EL A,B,D EL 4, G D G A, EL 1 G A, EL 2 No Grade Strong No Grade	**1 2 3 4 5 6 7 8 9** ○ **Niet beoordeelbaar** ○ **EMD extraheerbaar**	
5	Voor patiënten met een BMI >50kg/m2 is behandeling door middel van MBH de eerste keuze.	NHG	2020	No Grade	**1 2 3 4 5 6 7 8 9** ○ **Niet beoordeelbaar** ○ **EMD extraheerbaar**	
6	Patiënten met een (actueel of voormalig) BMI tussen 35-40kg/m2 en comorbiditeiten die gunstig beïnvloed kunnen worden door gewichtsverlies, zijn potentiële kandidaten voor MBH. (N.B. Voor Type 2 Diabetes, zie aparte aanbeveling)	NHG NVvH DM EASO/IFSO OC ASMBS SAGES ALES ASMBS/IFSO EAES EASO	2020 2020 2011 2013 2020 2019 2009 2020 2022 2020 2015	No Grade (V)Low G No Grade EL A,B,D EL 4, G D G C, EL 3 *GA, EL 2* No Grade No Grade Strong No Grade	**1 2 3 4 5 6 7 8 9** ○ **Niet beoordeelbaar** ○ **EMD extraheerbaar**	

7	Voor Aziatische patiënten zijn de cut-offs voor MBH als volgt: BMI >35kg/m2 of BMI tussen 32.5-34.9 kg/m2 én comorbiditeiten	NVvH EASO/IFSO ASMBS/IFSO	2020 2013 2022	No Grade No EL No Grade	**1 2 3 4 5 6 7 8 9** ○ **Niet beoordeelbaar** ○ **EMD extraheerbaar**	
8	Voor patiënten met type 2 diabetes gelden volgende adviezen: BMI > 40kg/m2: raad MBH ten zeerste aan BMI 35-40kg/m2 en goed gecontroleerde DM2: overweeg MBH en slecht gecontroleerde DM2: adviseer MBH	NVvH EASO/IFSO OC ASMBS ALES EASO ASMBS/IFSO	2022 2013 2020 2019 2020 2015 2022	(V)Low G EL A, B, C, D EL 1a, G A G B, EL 2 No Grade EL 1 No Grade	**1 2 3 4 5 6 7 8 9** ○ **Niet beoordeelbaar** ○ **EMD extraheerbaar**	
Opmerkingen of suggesties voor nieuwe aanbevelingen:						

Pre-operatieve oppuntstelling

	Aanbeveling	**Bron**	**Jaar**	**Evidentie**	**Score**	**Ranking**
9	Bevraag de rookgeschiedenis.	ASMBS	2019	No Grade	**1 2 3 4 5 6 7 8 9** ○ **Niet beoordeelbaar** ○ **EMD extraheerbaar**	
10	Corrigeer eventuele tekorten aan voedingstoffen - voornamelijk vitamine D, vitamine B12 en ijzer.	OC	2020	G D, EL 4	**1 2 3 4 5 6 7 8 9** ○ **Niet beoordeelbaar** ○ **EMD extraheerbaar**	

11	Stop orale anticonceptie één cyclus en hormoonsubstitutie drie weken voor de ingreep om het risico op trombo-embolieën te verminderen.	ASMBS OC	2019 2020	G D No Grade	**1 2 3 4 5 6 7 8 9** ○ **Niet beoordeelbaar** ○ **EMD extraheerbaar**	
12	Streef naar optimale glycemiecontrole: HbA1c 6.5-7.0% of minder (48-53mmol/mol) én nuchtere glucosewaarden <110mg/dl of niet-nuchtere suiker (2h post-glucose) <140mg/dl.	ASMBS EASO OC	2019 2017 2020	G B, EL 2 G 2, EL C No Grade	**1 2 3 4 5 6 7 8 9** ○ **Niet beoordeelbaar** ○ **EMD extraheerbaar**	
13	Bij patiënten met micro- of macrovasculaire complicaties, uitgesproken comorbiditeiten of lang bestaande diabetes worden meer liberale waarden (HbA1c tussen 7-8% (53-64mmol/mol)) gehanteerd.	ASMBS EASO	2019 2017	G A, EL 1 G 2, EL C	**1 2 3 4 5 6 7 8 9** ○ **Niet beoordeelbaar** ○ **EMD extraheerbaar**	
14	Verwijs potentiële kandidaten naar een obesitaskliniek.	ASMBS	2019	G D	**1 2 3 4 5 6 7 8 9** ○ **Niet beoordeelbaar** ○ **EMD extraheerbaar**	
15	Verwijs patiënten bij vermoeden van onderliggende oorzaak van obesitas, zoals endocriene stoornis of genetische of syndromale oorzaak van obesitas, naar een gespecialiseerd centrum voor verdere onderzoeken.	NVvH	2020	No Grade	**1 2 3 4 5 6 7 8 9** ○ **Niet beoordeelbaar** ○ **EMD extraheerbaar**	
Opmerkingen of suggesties voor nieuwe aanbevelingen:						

Pre-operatieve onderzoeken						
	Aanbeveling	**Bron**	**Jaar**	**Evidentie**	**Score**	**Ranking**
16	Screen op H.Pylori dragerschap door middel van een ademtest, fecale antigentest of door serologie. *(N.B. vooral belangrijk in gebieden met hoge prevalentie)*	NVvH EASO/IFSO *ASMBS* OC EAES	2020 2013 *2019* 2020 2020	No Grade EL A,B,C,D *G C, EL 3* No Grade Conditional	**1 2 3 4 5 6 7 8 9** ○ **Niet beoordeelbaar** ○ **EMD extraheerbaar**	
17	Controleer nuchtere glucose, HbA1c, lipidenprofiel en leverenzymen om de metabole complicaties ten gevolge van obesitas in te schatten.	OC	2020	(G D, EL 4)	**1 2 3 4 5 6 7 8 9** ○ **Niet beoordeelbaar** ○ **EMD extraheerbaar**	
18	Voorzie kankerscreening in functie van leeftijd en risicoprofiel.	ASMBS OC	2019 2020	G C, EL 3 No Grade	**1 2 3 4 5 6 7 8 9** ○ **Niet beoordeelbaar** ○ **EMD extraheerbaar**	

19	Controleer de voedingsstatus aan de hand van: - algemeen bloedbeeld - bloedgroep - elektrolyten - nierfunctie - ijzer - ferritine - vitamine B12 - foliumzuur - vitamine D - zink - PTH Bij een malabsorptieve ingreep (zoals RYGB en BPD/DS) ook: - calcium - vitamine A - vitamine E - INR - (pre)albumine - vitamine B1	NVvH ASMBS OC *ASMBS*	2020 2019 2020 *2019*	No Grade (G A , EL 1) (G D, EL 4) *G C, EL 3*	**1 2 3 4 5 6 7 8 9** ○ **Niet beoordeelbaar** ○ **EMD extraheerbaar**	
Opmerkingen of suggesties voor nieuwe aanbevelingen:						

Follow-up: aanpassingen van medicatie

	Aanbeveling	**Bron**	**Jaar**	**Evidentie**	**Score**	**Ranking**
20	Zet orale anticoagulantia (DOAC) na RYGB om naar vitamine K antagonisten aangezien de werkzaamheid van DOAC's na RYGB niet verzekerd kan worden.	OC	2020	No Grade	**1 2 3 4 5 6 7 8 9** ○ **Niet beoordeelbaar** ○ **EMD extraheerbaar**	

21	Zet orale anticonceptie na een malabsorptieve procedure om in non-orale anticonceptie.	ASMBS EASO OC	2019 2017 2020	G D G D, EL 3 No Grade	**1 2 3 4 5 6 7 8 9** ○ **Niet beoordeelbaar** ○ **EMD extraheerbaar**	
22	Overweeg opstart van protonpompinhibitoren (PPI) bij patiënten die na de ingreep NSAID's krijgen.	ASMBS OC	2019 2020	G C, EL 3 No Grade	**1 2 3 4 5 6 7 8 9** ○ **Niet beoordeelbaar** ○ **EMD extraheerbaar**	
23	Geef PPI's aan patiënten die in kader van secundaire preventie onder lage dosis aspirine staan.	OC	2020	No Grade	**1 2 3 4 5 6 7 8 9** ○ **Niet beoordeelbaar** ○ **EMD extraheerbaar**	
24	Vermijd behandeling met NSAIDs en corticosteroïden.	EASO/IFSO ASMBS EASO OC	2013 2019 2017 2020	No EL G C, EL 3 G D, EL 3 No Grade	**1 2 3 4 5 6 7 8 9** ○ **Niet beoordeelbaar** ○ **EMD extraheerbaar**	
Opmerkingen of suggesties voor nieuwe aanbevelingen:						

Follow-up: onderzoeken						
	Aanbeveling	**Bron**	**Jaar**	**Evidentie**	**Score**	**Ranking**
25	Volg, na ontslag uit het obesitascentrum, jaarlijks het gewicht van uw patiënt op.	NHG OC	2020 2020	No Grade EL 4, G D	**1 2 3 4 5 6 7 8 9** ○ **Niet beoordeelbaar** ○ **EMD extraheerbaar**	
26	Controleer jaarlijks de bloeddruk en het glucose- en lipidenprofiel voor opvolging van de comorbiditeiten en afbouw van medicatie.	NHG NVvH EASO/IFSO ASMBS ASMBS EASO OC	2020 2020 2013 2019 2019 2017 2020	No Grade No Grade No EL G A, EL 1 G D G D, EL 4 G D , EL 4	**1 2 3 4 5 6 7 8 9** ○ **Niet beoordeelbaar** ○ **EMD extraheerbaar**	
27	Verricht een jaarlijkse bloedname om eventuele tekorten tijdig op te sporen en te behandelen. De eerste twee jaar gebeurt dit bij voorkeur in het ziekenhuis, daarna kan dit door de huisarts opgevolgd worden.	NVvH OC	2020 2020	No Grade EL 4, G D	**1 2 3 4 5 6 7 8 9** ○ **Niet beoordeelbaar** ○ **EMD extraheerbaar**	
28	Screen zwangere vrouwen driemaandelijks op tekort aan voedingstoffen waaronder ijzer, foliumzuur, vitamine B12, vitamine D en calcium; bij malabsorptieve ingrepen ook op vetoplosbare vitamines, zink en koper.	NVvH ASMBS EASO OC	2020 2019 2017 2020	No Grade G D G D, EL 3 No Grade	**1 2 3 4 5 6 7 8 9** ○ **Niet beoordeelbaar** ○ **EMD extraheerbaar**	

29	Controleer na gastric banding of gastric sleeve operatie o.a.: - algemeen bloedbeeld - elektrolieten - iizer (G B, EL 2) - ferritine - vitamine B12 (G B, EL 2) - foliumzuur - vitamine D (G B, EL 2 voor GS) - zink - PTH (G C, EL 3) - calcium (G C, EL 3) - fosfor (G C, EL 3) - 24h calcium excretie (G C, EL 3) - vitamine B1 (G C, EL 3) - albumine Doe dit het eerste jaar zesmaandelijks, daarna jaarlijks.	NVvH EASO OC ASMBS	2020 2017 2020 2019	No Grade No Grade No Grade See Rec.	**1 2 3 4 5 6 7 8 9** ○ **Niet beoordeelbaar** ○ **EMD extraheerbaar**	

30	Controleer na gastric bypass operatie o.a.: - algemeen bloedbeeld - elektrolieten - iizer (G B, EL 2) - ferritine - vitamine B12 (G B, EL 2) - foliumzuur - vitamine D (G B, EL 2) - zink (G C, EL 3) - PTH (G C, EL 3) - calcium (G C, EL 3) - fosfor (G C, EL 3) - 24h calcium excretie (G C, EL 3) - osteocalcine - vitamine B1 (G C, EL 3) - albumine - koper (G C, EL 3) - ceruloplasmine (G C, EL 3) - vitamine A Doe dit het eerste jaar drie- tot zesmaandelijks, daarna jaarlijks.	NVvH EASO OC ASMBS	2020 2017 2020 2019	No Grade No Grade No Grade See Rec.	**1 2 3 4 5 6 7 8 9** ○ **Niet beoordeelbaar** ○ **EMD extraheerbaar**	

31	Controleer na biliopancreatische diversie en duodenale switch o.a.: - algemeen bloedbeeld - elektrolieten - iizer (G B, EL 2) - ferritine - vitamine B12 (G B, EL 2) - foliumzuur - vitamine D (G B, EL 2) - zink (G C, EL 3) - PTH (G C, EL 3) - calcium (G C, EL 3) - fosfor (G C, EL 3) - 24h calcium excretie (G C, EL 3) - osteocalcine - vitamine B1 (G C, EL 3) - (pre)albumine - koper (G C, EL 3) - ceruloplasmine (G C, EL 3) - vitamine A - vitamine E - INR Doe dit het eerste jaar driemaandelijks, daarna half- tot jaarlijks.	NVvH EASO OC ASMBS	2020 2017 2020 2019	No Grade No Grade No Grade See Rec.	**1 2 3 4 5 6 7 8 9** ○ **Niet beoordeelbaar** ○ **EMD extraheerbaar**	
32	Sluit systematisch (bv elke 3 maanden) een vitamine B12 tekort uit bij patiënten die gesubstitueerd worden met hoge dosis foliumzuur (>1000 µg/d) of patiënten onder chronische medicatie die vitamine B12 tekort kunnen uitlokken zoals stikstofmonoxide, neomycine, metformine, colchicine, PPI en anti-epileptica.	ASMBS *ASMBS*	2019 *2019*	G B, EL 2 *G D*	**1 2 3 4 5 6 7 8 9** ○ **Niet beoordeelbaar** ○ **EMD extraheerbaar**	

33	Screen patiënten op een vitamine A tekort in het eerste jaar na RYGB of BPD/DS of bij vermoeden van ondervoeding gezien de hoge prevalentie van vitamine A tekort in deze omstandigheden.	ASMBS	2019	G C, EL 3	**1 2 3 4 5 6 7 8 9** ○ **Niet beoordeelbaar** ○ **EMD extraheerbaar**	
34	Sluit een vitamine E tekort uit bij patiënten met hemolytische anemie of neuromusculaire symptomen (waarvan oftalmologische symptomen in het bijzonder). Vitamine K tekort moet opgespoord worden bij patiënten met excessieve bloedingen of hematomen.	ASMBS	2019	G D	**1 2 3 4 5 6 7 8 9** ○ **Niet beoordeelbaar** ○ **EMD extraheerbaar**	
35	Ga na of er sprake is van zink tekort bij patiënten met chronische diarree, haarverlies, pica, smaakveranderingen, en bij mannelijke patiënten met onverklaarbaar hypogonadisme of erectiele dysfunctie.	ASMBS	2019	G D	**1 2 3 4 5 6 7 8 9** ○ **Niet beoordeelbaar** ○ **EMD extraheerbaar**	
36	Sluit door middel van serum koper en ceruloplasmine bepaling een koperdeficiëntie uit bij patiënten met anemie, neutropenie, myeoloneuropathie of vertraagde wondheling.	ASMBS	2019	G D	**1 2 3 4 5 6 7 8 9** ○ **Niet beoordeelbaar** ○ **EMD extraheerbaar**	
37	Test patiënten die persisterend braken op vitamine B1 tekort.	NVvH EASO OC	2020 2017 2020	No Grade G D, EL 4 No Grade	**1 2 3 4 5 6 7 8 9** ○ **Niet beoordeelbaar** ○ **EMD extraheerbaar**	
38	Controleer selenium in patiënten die na een malabsorptieve ingreep klachten hebben van onverklaarbare vermoeidheid, anemie, persisterende diarree, cardiomyopathie of metabole botaandoeningen.	ASMBS	2019	G C, EL 3	**1 2 3 4 5 6 7 8 9** ○ **Niet beoordeelbaar** ○ **EMD extraheerbaar**	
Opmerkingen of suggesties voor nieuwe aanbevelingen:						

Follow-up: Behandeling

	Aanbeveling	Bron	Jaar	Evidentie	Score	Ranking
39	Substitueer vitaminen en mineralen levenslang.	NVvH EASO/IFSO EASO	2020 2013 2017	No Grade No EL G D, EL 3	**1 2 3 4 5 6 7 8 9** ○ **Niet beoordeelbaar** ○ **EMD extraheerbaar**	
40	Voorzie vrouwen ten laatste 3 maanden voor de conceptie tot 6 weken postpartum (of zolang ze borstvoeding geven) van 1mg foliumzuur per dag.	EASO OC	2017 2020	G D, EL 3 No Grade	**1 2 3 4 5 6 7 8 9** ○ **Niet beoordeelbaar** ○ **EMD extraheerbaar**	

Opmerkingen of suggesties voor nieuwe aanbevelingen:

Management van complicaties

	Aanbeveling	Bron	Jaar	Evidentie	Score	Ranking
41	Controleer de suikerspiegel bij klachten van hypoglycemie, in het bijzonder bij diabetespatiënten.	EASO/IFSO ASMBS *ASMBS*	2013 2019 *2019*	EL C G C, EL 3 *G A, EL 1*	**1 2 3 4 5 6 7 8 9** ○ **Niet beoordeelbaar** ○ **EMD extraheerbaar**	
42	Behandel patiënten met de novo klachten van gastro-oesofagale reflux met PPI's.	ASMSBS	2019	G C, EL 3	**1 2 3 4 5 6 7 8 9** ○ **Niet beoordeelbaar** ○ **EMD extraheerbaar**	

43	Behandel dragers van H Pylori met triple therapie bestaande uit antibiotica, bismut en PPI's.	ASMBS	2019	G C, EL 3	**1 2 3 4 5 6 7 8 9** ○ **Niet beoordeelbaar** ○ **EMD extraheerbaar**	
Opmerkingen of suggesties voor nieuwe aanbevelingen:						

Verwijzing

	Aanbeveling	**Bron**	**Jaar**	**Evidentie**	**Score**	**Ranking**
44	Verwijs patiënten met overtollige huid die hygiëne in het gedrang brengt of (esthetisch) ongemakken veroorzaakt door voor een buikwandcorrectie.	NHG ASMBS	2020 2019	No Grade G C, EL 3	**1 2 3 4 5 6 7 8 9** ○ **Niet beoordeelbaar** ○ **EMD extraheerbaar**	
45	Verwijs vrouwen met een kinderwens naar een gyneacoloog voor preconceptioneel advies.	NVvH EASO OC	2020 2017 2020	No Grade G D, EL 4 EL 4, G D	**1 2 3 4 5 6 7 8 9** ○ **Niet beoordeelbaar** ○ **EMD extraheerbaar**	
46	Verwijs patiënten met OSAS 3 tot 6 maanden na de ingreep naar een pneumoloog voor herevaluatie en aanpassing van BiPAP/CPAP therapie.	EASO	2017	G D, EL 4	**1 2 3 4 5 6 7 8 9** ○ **Niet beoordeelbaar** ○ **EMD extraheerbaar**	
47	Volg na een malabsorptieve ingreep tweejaarlijks de botdensiteit op aan de hand van een DXA scan.	NVvH ASMBS OC	2013 2019 2020	No Grade G D No Grade	**1 2 3 4 5 6 7 8 9**	

					○ **Niet beoordeelbaar** ○ **EMD extraheerbaar**	
48	Verwijs patiënten met onderstaande klachten onmiddellijk door naar de bariatrisch chirurg: - Persisterende klachten van GERD, chronische hoest of recurrente aspiratiepneumonie (G D, EL 4) - Symptomatische hernia (G C, EL 3) - Ernstige malnutritie of hypoglycemies (G D) - Gastro-intestinale complicaties in klinisch onstabiele patiënten (G D) - Abdominale pijn in zwangere vrouwen (G C, EL 3)	AMSBS OC EASO	2019 2022 2017	See recommen-dations	**1 2 3 4 5 6 7 8 9** ○ **Niet beoordeelbaar** ○ **EMD extraheerbaar**	
49	Patiënten met gastro-intestinale klachten suggestief voor aanwezigheid van strictuur of vreemd voorwerp moeten een endoscopie ondergaan aangezien dit zowel diagnostisch als therapeutisch kan zijn.	ASMBS	2019	G C, EL 3	**1 2 3 4 5 6 7 8 9** ○ **Niet beoordeelbaar** ○ **EMD extraheerbaar**	
50	Patiënten met rechter fossa pijn moeten een echo krijgen om cholecystitis uit te sluiten.	ASMBS	2019	G D	**1 2 3 4 5 6 7 8 9** ○ **Niet beoordeelbaar** ○ **EMD extraheerbaar**	
Opmerkingen of suggesties voor nieuwe aanbevelingen:						

* G = grade, EL = evidence level, (V)low = very low and low grade
nuanceringen binnen één aanbeveling waarvoor aparte evidentie bestaat staan *schuin* gedrukt
( ) werden gebruikt wanneer de aangegeven evidentie op een bredere aanbeveling van toepassing was dan diegene die geselecteerd werd via de SMART criteria; de volledige aanbevelingen kan je terugvinden in de richtlijnen